1. **No.**

   FP01801023

2. **Title**

   Deciphering the cell-biological origin of chemotactic ability of small-cell lung cancer cells

3. **Period**

   2016-2019

4. **Summary**

The pulmonary neuro endocrine (NE) cells can be the origin in small-cell lung cancer (SCLC) which is known as malignant type cancer. In our previous study, we discovered that NE cells show directional migration in developing lung to make cell clusters at bifurcating airways, reflecting the malignancy of SCLC cells. In this project, we will investigate the molecular mechanisms of NE cell migration that may provide important clues toward the development of new therapeutic approaches to mitigate this malignancy. We established method to isolate and purify developing NE cells from mouse embryonic lungs using cell sorting method. The transcriptomes of these developing NE cells are analyzed by single-cell sequencing technology. Clustering analysis for E14.5 and E18.5 NE cells revealed heterogeneity of this population. We found a subpopulation expressing chemotaxis-related genes and identified 13 candidates of regulatory genes in NE cell chemotaxis. We further identified some small compounds suppressing NE cell migration that can inhibit particular cell signaling pathway. Cellular signals identified in our study are also activated in human small cell lung cancer cells, suggesting the possibility these signals are related to the migration ability of NE cells. In the future, we will analyze the migration of NE cells from the viewpoint of cell biology and study the effects on cell migration and the inhibitory effect on metastatic potential using small cell lung cancer cell lines.